

What is claimed is:

1. A ferroelectric element comprising:
  - a first electrode;
  - a ferroelectric film formed on the first electrode;
  - a second electrode formed on the ferroelectric film;
  - a first hydrogen blocking film formed directly on a surface of the second electrode;
  - a first insulation film formed on the first hydrogen blocking film;
  - a first opening formed in the first hydrogen blocking film and exposing a part of the second electrode;
  - a second opening formed having a greater diameter than a diameter of the first opening, in the first insulation film; and
  - an interconnect film connected to the second electrode through the first and second openings.
2. A ferroelectric element according to claim 1, wherein the first and second openings each have a diameter substantially constant with respect to the axial direction thereof.
3. A ferroelectric element according to claim 2, wherein the first and second openings are formed by different processes from each other.
4. A ferroelectric element according to claim 3, wherein the first opening is formed in the hydrogen blocking film prior to forming the first insulation film.

5. A ferroelectric element according to claim 2, wherein the first opening has an aspect ratio of 1 or smaller.

6. A ferroelectric element according to claim 1, wherein the first and second openings are formed to have a diameter increasing with distance from the second electrode.

7. A ferroelectric element according to claim 6, wherein the first and second openings are formed in one process.

8. A ferroelectric element according to claim 6, wherein the first insulation film has a second hydrogen blocking film formed at the second opening and a second insulation film formed around the second hydrogen blocking film.

9. A ferroelectric element according to claim 8, wherein the first and second openings are formed in a self-aligned fashion by etching back.

10. A method for manufacturing a ferroelectric element comprising:

a step of forming a first electrode, a ferroelectric film, and a second electrode, in that order;

a step of forming a first hydrogen blocking film directly on a surface of the second electrode;

a step of forming a first insulation film on the first hydrogen blocking film;

a step of forming an opening exposing a part of the second electrode in the first hydrogen blocking film and first insulation film such that the diameter of the hole in the first

hydrogen blocking film is smaller than the diameter of the hole in the first insulation film; and

a step of forming an interconnect film connected to the second electrode through the opening.

11. A method for manufacturing a ferroelectric element according to claim 10, wherein the opening forming step includes a step of forming the first hydrogen blocking film with a first opening exposing a part of the second electrode, and a step of forming the first insulation film with a second opening having a diameter greater than the diameter of the first opening.